



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,351	03/02/2005	Hisashi Watanabe	OPC-C539	8958

7590

07/06/2006

George A Loud  
Bacon & Thomas  
625 Slaters Lane, Fourth Floor  
Alexandria, VA 22314-1176

EXAMINER
----------

LAM, CATHY FONG FONG

ART UNIT	PAPER NUMBER
----------	--------------

1775

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/526,351

Applicant(s)

WATANABE ET AL.

Examiner

Cathy Lam

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-8, drawn to a film laminate.

Group II, claim(s) 9, drawn to a method of fabricates a flexible circuit board.

2. The inventions listed as Groups I & II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the product as claimed is not required to be fabricated by the claimed method and likewise the process as claimed is not required to have all the claimed elements in order to form a flexible circuit board.

3. During a telephone conversation with Atty: George Loud on June 21, 2006 a provisional election was made with traverse to prosecute the invention of group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claim 9 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Information Disclosure Statement***

The IDS filed on April 05, 2005 does not include a copy of the Foreign Patent Document 09-3114116 listed. Furthermore, two foreign patent documents submitted 05-110218 and 09-311446 were not listed on the PTOL 1449. Applicant is required to put these documents on a PTOL 1449 when respond to this office action.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Nishinaka et al (US 6586081).

It is noted by the Examiner that some claims are drafted in a product by process format. It is the product itself which must be new and unobvious. Unless some

Art Unit: 1775

unexpected result is shown that occurs due to Applicant's specific process(es), different processing steps are not patentably distinguishing for claims to an article.

Nishinaka discloses a polyimide/metal laminate comprised of a polyimide film and a metal layer. The polyimide/metal laminate is particularly used for flexible printed wiring boards.

The polyimide film is obtained by a polyamic acid which is produced by at least one aromatic acid anhydride and at least one diamine (col 5 L 23-25). The metal layer is preferably a copper foil (col 1 L 40-45).

The copper foil is bonded to the polyimide film via an organotitanium compound (col 2 L 36-41). The copper foil has a thickness of 2000 Å (or 0.2 μm) is applied over onto the surface of the polyimide film.

Although Nishinaka is silent about the water absorption coefficient and the linear expansion coefficient of the heat resistant polymer film, since the polyamic acid composition which serving as a polyimide precursor meets the disclosed polyimide material (i.e. 3,3',4,4'-benzophenone-tetracarboxylic acid dianhydride) (col 5 L 55), it is inherent that Nishinaka's polyimide film possesses the same properties as claimed by the Applicant.

7. Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yamamoto et al (US 6548180).

It is noted by the Examiner that some claims are drafted in a product by process format. It is the product itself which must be new and unobvious. Unless some

Art Unit: 1775

unexpected result is shown that occurs due to Applicant's specific process(es), different processing steps are not patentably distinguishing for claims to an article.

Yamamoto discloses a polyimide/metal film laminate that is used for flexible printed circuit boards (col 1 L 30-32).

The polyimide film is an aromatic polyimide film, it has a linear thermal coefficient of  $1.7 \times 10^{-5}$  to  $2.4 \times 10^{-5}$  cm/cm/°C (col 3 L 24-28). The polyimide film is subjected to a discharge treatment on its surface and an adhesive layer before a metal film is applied (col 3 L 46-58 & col 4 L 15-23).

The surface of the polyimide film is treated with an organic phosphorus compound (or organometallic compound) (col 5 L 8-11). The surface is then further treated with an aminosilane coupling agent (col 5 L 28-30). An adhesive such as a polyimide-siloxane is coated onto the treated surface (col 6 L 18).

The metal film which can composed of two metal layers, is made of copper and has a total thickness from 1 to 20  $\mu\text{m}$  (col 6 L 61-67).

8. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Ozawa et al (US 6808818).

Ozawa discloses a polyimide/metal laminate which is useful for flexible printed circuit boards.

The polyimide is a composite polyimide film comprised of a fusible polyimide layer and a polyimide substrate (col 2 L 23-25). A copper film is formed onto the fusible polyimide layer (col 5 L 52-53).

Art Unit: 1775

The fusible polyimide layer is a doped solution comprised of an organic metallic compound such as organic aluminum compound (col 4 L 62-67 & col 5 L 1-3).

The composite polyimide film has a linear expansion coefficient of  $1.5 \times 10^{-5}$  to  $3.0 \times 10^{-5}$  cm/cm/°C (col 5 L 38-41).

The examiner is taking the position that since the polyimide film meets the present invention inherently it has the same water absorption coefficient.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishinaka et al (US 6586081) or Yamamoto et al (US 6548180) or Ozawa et al (US 6808818).

All of the prior art teach a polyimide/metal film laminate that is useful for flexible printed circuit boards. The polyimide films in all of the three prior art are aromatic polyimide films and the metal films are copper foils.

All of the prior art teach using a bonding promotion material such as an organic metallic compound and/or a resin adhesive layer for better bonding between the polyimide film and the copper foil.

Art Unit: 1775

The prior art however do not teach the resin adhesive layer is formed onto the polyimide film before applying the organic metallic compound. The prior art also are silent about the cooper foils were patterned to form a circuit.

In view of the prior art teachings, one skill in the art would apply a resin adhesive onto the polyimide film before or after the organic metallic compound treatment because both the adhesive and the organic metallic compound are fluidic materials which would mixed or fused together to give a stronger bonding material.

Furthermore, it would have been obvious that the prior art laminates were patterned to form a circuit since they are all useful for printed circuit boards.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1775

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Cathy Lam  
Primary Examiner  
Art Unit 1775

cfI  
June 21, 2006